May 10, 2007

Mr. Dennis L. Koehl
Site Vice President
Point Beach Nuclear Plant
Nuclear Management Company, LLC
6610 Nuclear Road
Two Rivers, WI 54241-9516

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS REGARDING REVIEW OF REACTOR VESSEL FRACTURE MECHANICS ANALYSIS (TAC NOS. MD2359 AND MD2360)

Dear Mr. Koehl:

The Commission has issued the enclosed Amendment No. 227 to Renewed Facility Operating License No. DPR-24 and Amendment No. 232 to Renewed Facility Operating License No. DPR-27 for the Point Beach Nuclear Plant, Units 1 and 2, respectively. The amendments consist of changes to the Final Safety Analysis Report (FSAR) in response to the your application transmitted by letter dated June 6, 2006.

The amendments revise information in the FSAR regarding the reactor pressure vessel (RPV) Charpy upper-shelf energy (USE) requirements of Title 10 of the *Code of Federal Regulations* Part 50, Appendix G, Section IV.A.1.c. The change updates the analysis for satisfying the RPV Charpy USE requirements through the end of the current operating licenses.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,

/RA/

Patrick D. Milano, Senior Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-266 and 50-301

Enclosures:
1. Amendment No. 227 to DPR-24
2. Amendment No. 232 to DPR-27
3. Safety Evaluation

cc w/encls: See next page

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cc w/encls: See next page
DOCUMENT NAME: C:\FileNet\ML071300623.wpd
Accession Number: ML071300623

OFFICE	LPL3-1/GE	LPL3-1/PM	LPL3-1/LA	CVIB/SC	OGC	NRR/LPL3-1/BC
NAME	GTaylor	PMilano	THarris	MMitchell*	J. Rund	LRaghavan
DATE	4/25/07	4/26/07	4/25/07	04/03/07	5/2/07	5/10/07

* SE input dated April 3, 2007

OFFICIAL RECORD COPY

DATED: May 10, 2007

AMENDMENT NOS. 227 AND 232 TO RENEWED FACILITY OPERATING LICENSE NOS. DPR-24 AND DPR-27 FOR POINT BEACH NUCLEAR PLANT, UNIT 1 AND 2

DISTRIBUTION
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RidsRgn3MailCenter
RidsOgcRp
RidsAcrsAcnwMailCenter

cc: Plant Service list

Point Beach Nuclear Plant, Units 1 and 2

cc:

Jonathan Rogoff, Esquire
Vice President, Counsel & Secretary
Nuclear Management Company, LLC
700 First Street
Hudson, WI 54016

Mr. F. D. Kuester
President & Chief Executive Officer
WE Generation
231 West Michigan Street
Milwaukee, WI 53201

Regulatory Affairs Manager
Point Beach Nuclear Plant
Nuclear Management Company, LLC
6610 Nuclear Road
Two Rivers, WI 54241

Mr. Ken Duveneck
Town Chairman
Town of Two Creeks
13017 State Highway 42
Mishicot, WI 54228

Chairman
Public Service Commission
of Wisconsin
P.O. Box 7854
Madison, WI 53707-7854

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
Suite 210
2443 Warrenville Road
Lisle, IL 60532-4351

Resident Inspector's Office
U.S. Nuclear Regulatory Commission
6612 Nuclear Road
Two Rivers, WI 54241

Mr. Jeffery Kitsembel
Electric Division
Public Service Commission of Wisconsin
P.O. Box 7854
Madison, WI 53707-7854

Nuclear Asset Manager
Wisconsin Electric Power Company
231 West Michigan Street
Milwaukee, WI 53201

Michael B. Sellman
President and Chief Executive Officer
Nuclear Management Company, LLC
700 First Street
Hudson, MI 54016

Douglas E. Cooper
Senior Vice President & Chief Nuclear
Officer
Nuclear Management Company, LLC
700 First Street
Hudson, WI 54016

Site Director of Operations
Nuclear Management Company, LLC
6610 Nuclear Road
Two Rivers, WI 54241

NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-266

POINT BEACH NUCLEAR PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 227
License No. DPR-24

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Nuclear Management Company, LLC (the licensee) dated June 6, 2006, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, by Amendment No. 227, the license is amended to authorize revision to the Final Safety Analysis Report (FSAR), as set forth in the application dated June 6, 2006. The licensee shall update the FSAR to incorporate the updated analysis for satisfying the reactor pressure vessel (RPV) Charpy upper-shelf energy (USE) requirements as described in the licensee’s application dated June 6, 2006 and the NRC staff’s safety evaluation attached to this amendment, and shall submit the revised description authorized by this amendment with the next update of the FSAR.

3. This license amendment is effective as of the date of its issuance. In the next update of the FSAR required by 10 CFR 50.71(e), the licensee will implement this amendment by incorporating into the FSAR the revisions as submitted in its June 6, 2006, application, and evaluated in the staff's safety evaluation dated May , 2007.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

L. Raghavan, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Date of issuance: May 10, 2007

NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-301

POINT BEACH NUCLEAR PLANT, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 232
License No. DPR-27

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Nuclear Management Company, LLC (the licensee) dated June 6, 2006, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, by Amendment No. 232, the license is amended to authorize revision to the Final Safety Analysis Report (FSAR), as set forth in the application dated June 6, 2006. The licensee shall update the FSAR to incorporate the updated analysis for satisfying the reactor pressure vessel (RPV) Charpy upper-shelf energy (USE) requirements as described in the licensee’s application dated June 6, 2006 and the NRC staff’s safety evaluation attached to this amendment, and shall submit the revised description authorized by this amendment with the next update of the FSAR.

3. This license amendment is effective as of the date of its issuance. In the next update of the FSAR required by 10 CFR 50.71(e), the licensee will implement this amendment by incorporating into the FSAR the revisions as submitted in its June 6, 2006, application, and evaluated in the staff's safety evaluation dated May , 2007.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

L. Raghavan, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Date of issuance: May 10, 2007

ATTACHMENT TO LICENSE AMENDMENT NO. 227

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-24

AND LICENSE AMENDMENT NO. 232

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-27

DOCKET NOS. 50-266 AND 50-301

Replace the following pages of the Facility Operating Licenses with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE	INSERT
Unit 1 License Page 3	Unit 1 License Page 3
Unit 2 License Page 3	Unit 2 License Page 3

D. Pursuant to the Act and 10 CFR Parts 30, 40 and 70, NMC to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

E. Pursuant to the Act and 10 CFR Parts 30 and 70, NMC to possess such byproduct and special nuclear materials as may be produced by the operation of the facility, but not to separate such materials retained within the fuel cladding.

4. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations: 10 CFR Part 20, Section 30.34 of 10 CFR Part 30, Section 40.41 of 10 CFR Part 40, Sections 50.54 and 50.59 of 10 CFR Part 50, and Section 70.32 of 10 CFR Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:

A. Maximum Power Levels

NMC is authorized to operate the facility at reactor core power levels not in excess of 1540 megawatts thermal.

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 227, are hereby incorporated in the renewed operating license. NMC shall operate the facility in accordance with Technical Specifications.

C. Spent Fuel Pool Modification

The licensee[2] is authorized to modify the spent fuel storage pool to increase its storage capacity from 351 to 1502 assemblies as described in licensee's application dated March 21, 1978, as supplemented and amended. In the event that the on-site verification check for poison material in the poison assemblies discloses any missing boron plates, the NRC shall be notified and an on-site test on every poison assembly shall be performed.

[2] Reference to the licensee in License Conditions 4.C, 4.E and 4.H refers to Wisconsin Electric Power Company and is maintained for historical purposes.

C. Pursuant to the Act and 10 CFR Parts 30, 40 and 70, NMC to receive, possess and use at any time any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed source for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

D. Pursuant to the Act and 10 CFR Parts 30, 40 and 70, NMC to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

E. Pursuant to the Act and 10 CFR Parts 30 and 70, NMC to possess such byproduct and special nuclear materials as may be produced by the operation of the facility, but not to separate such materials retained within the fuel cladding.

4. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations: 10 CFR Part 20, Section 30.34 of 10 CFR Part 30, Section 40.41 of 10 CFR Part 40, Sections 50.54 and 50.59 of 10 CFR Part 50, and Section 70.32 of 10 CFR Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:

A. Maximum Power Levels

NMC is authorized to operate the facility at reactor core power levels not in excess of 1540 megawatts thermal.

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 232, are hereby incorporated in the renewed operating license. NMC shall operate the facility in accordance with Technical Specifications.

C. Spent Fuel Pool Modification

The licensee[2] is authorized to modify the spent fuel storage pool to increase its storage capacity from 351 to 1502 assemblies as described in licensee's application dated March 21, 1978, as supplemented and amended. In the event that the on-site verification check for poison material in the poison assemblies discloses any missing boron plates, the NRC shall be notified and an on-site test on every poison assembly shall be performed.

[2] Reference to the licensee in License Conditions 4.C and 4.E refers to Wisconsin Electric Power Company and is maintained for historical purposes.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 227 TO RENEWED FACILITY

OPERATING LICENSE NO. DPR-24

AND AMENDMENT NO. 232 TO RENEWED FACILITY

OPERATING LICENSE NO. DPR-27

NUCLEAR MANAGEMENT COMPANY, LLC

POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-266 AND 50-301

1.0 INTRODUCTION

By letter dated June 6, 2006, Nuclear Management Company, LLC (NMC), requested the review of a reactor vessel fracture mechanics analysis for Point Beach Nuclear Plant (PBNP) Units 1 and 2, incorporating an updated analysis for satisfying the reactor pressure vessel (RPV) Charpy upper-shelf energy (USE) requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix G, Section IV.A.1.c. In support of this application, the licensee enclosed AREVA Document BAW-2467P, Revision 1, "Low Upper-Shelf Toughness Fracture Mechanics Analysis of Reactor Vessel of Point Beach Units 1 and 2 for Extended Life through 53 Effective Full Power Years," dated October 2004, for review.

2.0 REGULATORY EVALUATION

The underlying purpose of Appendix G to 10 CFR Part 50 is to set forth fracture toughness requirements for ferritic materials of pressure-retaining components of the reactor coolant pressure boundary of light-water nuclear power reactors to provide adequate margins of safety during any condition of normal operation, including anticipated operational occurrences and system hydrostatic tests, to which the pressure boundary may be subjected over its service lifetime. Appendix G to 10 CFR Part 50 requires that RPV beltline materials have Charpy USE values in the transverse direction for the base metal and along the weld for the weld material of no less than 75 ft-lb (102 J) initially, and must maintain Charpy USE values throughout the life of the vessel of no less than 50 ft-lb (68 J). However, in accordance with 10 CFR Part 50, Appendix G, paragraph IV.A.1.a., Charpy USE values below these criteria may be acceptable if it is demonstrated, in a manner approved by the Director, Office of Nuclear Reactor Regulation, that the lower values of Charpy USE will provide margins of safety against fracture equivalent to those required by Appendix G of Section XI of the American Society of Mechanical Engineers (ASME) Code. Regulatory Guide (RG) 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials," provides an expanded discussion regarding the calculation of Charpy USE values.

3.0 TECHNICAL EVALUATION

NMC indicated that the Charpy USE for the limiting welds will be less than 50 ft-lbs based on RG 1.99, Revision 2, at 53 effective full power years (EFPY). Therefore, in order to demonstrate that sufficient margins of safety against fracture remain to satisfy the requirements of Appendix G to 10 CFR Part 50, a fracture mechanics evaluation was performed to examine the PBNP USE values in the limiting weld. The evaluation examined the USE values for end of license extension (EOLE) conditions. The PBNP fracture mechanics evaluation used the J-R ratio methodology, which demonstrates the acceptability of J-R values in satisfying the USE requirement by examining J-R ratios, which are defined as the ratio of the lower bound J-R value divided by the applied J. If this ratio is greater than or equal to one, the acceptance criteria are met. This methodology is described in B&W Owners Reactor Vessel Working Group reports BAW-2192PA, "Low Upper-Shelf Toughness Fracture Mechanics Analysis of Reactor Vessels of B&W Owners Reactor Vessel Working Group for Level A & B Service Loads," and BAW-2178-PA, "Low Upper-Shelf Toughness Fracture Mechanics Analysis of Reactor Vessels of B&W Owners Reactor Vessel Working Group for Level C & D Service Loads," both dated April 1994. The Nuclear Regulatory Commission (NRC) staff reviewed and approved both reports for referencing in licensing applications in separate letters dated March 29, 1994.

Additional equivalent margins analyses were performed for the PBNP RPVs to address the following EOLE conditions: the uprated power condition of 1678 megawatt thermal (MWt) without hafnium suppression assemblies; current power conditions of 1540 MWt without hafnium suppression assemblies; and current power conditions of 1540 MWt with hafnium suppression assemblies. The 2004 fluence projections were used to define EOLE vessel fluences. These analyses used the same methodologies described in the above references and are summarized in BAW-2467P.

In BAW-2467P, the licensee performed a plant-specific fracture mechanics analysis. The lower bounding J-R values and all acceptance ratios are summarized in Tables 6-4 through 6-6 of the report. From the tables, it can be seen that the controlling weld is axial weld SA-847, with a minimum ratio of material J integral resistance to the applied J integral of 1.87 under current power conditions without hafnium power suppression absorber rods installed. Since the values of the J-R ratios are greater than one, the acceptance criteria for equivalent margins analysis have been met.

To confirm that the licensee's analysis satisfied the criteria in ASME Code Section XI, Appendix K, the NRC staff performed an independent analysis using the methodologies and models specified in RG 1.161, "Evaluation of Reactor Pressure Vessels with Charpy Upper-Shelf Energy Less than 50 ft-lb," NUREG/CR-5729," Multivariable Modeling of Pressure Vessel and Piping J-R Data," and ASME Service Levels A, B, C and D loadings based on the evaluation criteria of the ASME Code, Section XI, Appendix K. Based on the NRC staff's analysis, the NRC staff confirmed that the PBNP, Units 1 and 2 RPVs would have margins of safety against fracture equivalent to those required by Appendix G of Section XI of the ASME Code through the period of extended operation.

A low upper-shelf toughness fracture mechanics analysis was performed to evaluate the RPV welds at PBNP, Units 1 and 2 for projected low USE levels at EOLE (53 EFPY), considering Levels A, B, D, and D service loadings of the ASME Code. For Levels A and B service loading,

the low USE fracture toughness analysis was performed according to the acceptance criteria and evaluation procedures contained in Appendix K to Section XI of the ASME Code. There are no Level C service load transients specified for PBNP. Three Level D transients were evaluated, including: the reactor coolant line break loss-of-coolant accident (LOCA), the Final Safety Analysis Report steamline break, and the RPV equipment specification steamline break transients. The LOCA transient is the most limiting Level D transient.

ASME Code, Section XI, Appendix K contains a methodology and criteria acceptable to the NRC staff for satisfying the requirement in paragraph IV.A.1.a of Appendix G to demonstrate that materials with Charpy USE values below 50 ft-lb (68 J) provide margins of safety against fracture equivalent to those required by Appendix G of Section XI of the ASME Code. Based on its analysis, the NRC staff confirmed the conclusion that the analysis contained in AREVA Document BAW-2467P, Revision 1, "Low Upper-Shelf Toughness Fracture Mechanics Analysis of Reactor Vessel of Point Beach Units 1 and 2 for Extended Life through 53 Effective Full Power Years," is in accordance with ASME Code, Section XI, Appendix K, and the licensee has satisfied the requirement in paragraph IV.A.1.a of Appendix G, 10 CFR Part 50, for satisfying the RPV Charpy USE requirements through the end of the units' current operating licenses.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Wisconsin State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (71 FR 40750). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: C. Fairbanks

Date: May 10, 2007